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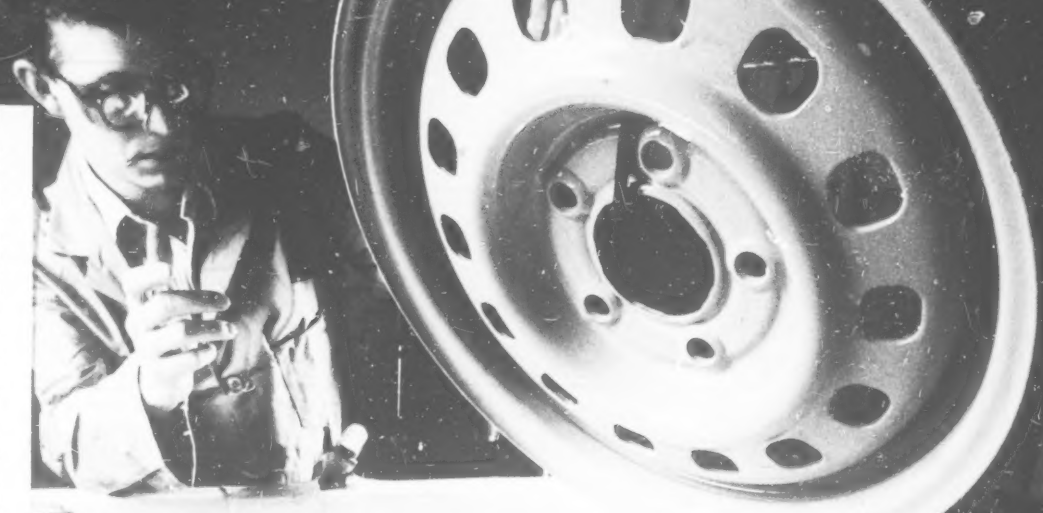
More scientific news from the Chicago ACS meeting

SEPTEMBER 30, 1985

CHEMICAL ENGINEERING

NEWS



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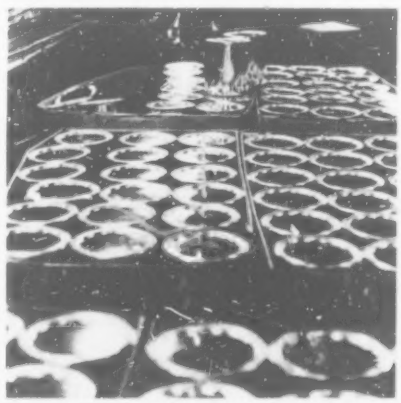


Product Report

Paint and coatings firms are taking on a more global look, acquiring other companies in their product area to face geographically shifting markets. **Page 27**

Chemical Capital Spending Up Slightly

Capital spending in the U.S. chemical industry appears to be slightly ahead of last year's and may be ahead of spending goals set at the beginning of the year.

According to a C&EN survey of 10 large chemical companies, spending in the first half of 1985 totaled $1.58 billion up about 5% from first-half 1984. However, at the end of 1984, these same 10 firms had budgeted an estimated $3.63 billion for all of 1985, less than 4% more than they actually spent in 1984.

More significant, in the first half of this year, the companies had spent 43% of their planned budgets. In the same period last year, they had spent 41% of their estimated budgets for the year and 43% of their final spending. Since capital spending in the second half tends to be higher than in the first half, this would indicate that final spending for 1985 for these companies could end up at least equal to, if not higher than, they originally planned. However, a widely forecast slowing of the economy in the second half could negate that, with chemicals following the rest of the economy in pulling in the capital spending horns for the remainder of the year.

The modest annual increase in capital spending by these chemical companies is at variance with capital spending in broader surveys, but in different directions. Capital spending in the manufacturing sector has been steaming along for the past year but is expected to slow now. The Conference Board's survey of capital spending for all manufacturing shows a first-half increase of almost 18% over the same period of 1984. However, the survey by the New York City-based business research group shows that capital spending in chemicals and allied products in the first half totaled $5.3 billion, an almost 3% decline from the same period last year.

It is not surprising that capital spending in the chemical industry has been lackluster, compared with the rest of the economy. The government estimates seasonally adjusted capacity utilization for chemicals at about 78%, a figure that may well be too high, according to industry sources. They say that the overhang of shutdown chemical plants that could be restarted if demand were to justify it could put capacity utilization even lower if they were counted.

This overhanging capacity is also serving to depress chemical prices, thereby keeping returns on plants below reinvestment levels, further depressing the capital spending picture. Pricing could be complicated even more by a slowing in demand in chemical end-use markets and also could slow the need for any new capacity in the second half.

There are warning signs looming. According to the Conference Board analysis of its broader survey of all manufacturing, in spite of a brisk increase in capital expenditures in the second quarter over the first quarter, capital appropriations (monies allocated to be spent in the future) by the country's 1000 largest manufacturers were down.

Douglas Cliggott, director of the survey for the Conference Board, says, "Latest survey findings now suggest little, if any, growth in capital spending over the next two quarters. The anticipated slowdown [in capital spending] will clearly make it more difficult for the economy to achieve a strong rebound in the second half of this year."

The Conference Board survey shows the same situation in the chemical industry as in manufacturing as a whole. While capital expenditures for chemicals and allied products in the second quarter were increasing 10% from the first quarter to $2.80 billion, capital appropriations were dropping almost 12% to $3.01 billion.

The Conference Board survey also shows another problem in backlogs (monies appropriated, but as yet unspent). That figure ideally rises, indicating an increasing amount of money in the pipeline. However, in the second quarter the backlog for chemicals and allied products fell almost 1% to $8.44 billion from first-quarter figures.

Thus, although there are slight signs that a few major chemical companies may finish the year with modestly good capital programs, chances are that for the industry as a whole, capital spending is going to remain sluggish just as it has for the past few years.

William Storck, New York

Chemical spending in first half is up 5% from last year

$ Millions	First-half capital spending	Earliest full-year estimate	% annual change first half	% of full-year budget spent in first-half 1985	% of full-year budget spent in first-half 1984	First-half spending as % of total 1984 spending
Air Products[a]	$ 138	$ 325	21%	43%	36%	44%
Celanese	81	200	42	41	33	34
Dow Chemical	348	830	14	42	41	39
Ethyl	43	116	−14	37	53	49
W. R. Grace	179	420	2	43	39	46
Hercules	96	210	4	46	46	42
Monsanto	293	575	7	51	46	45
Olin	49	170	−5	29	30	32
Rohm & Haas	64	130	15	49	43	41
Union Carbide	286	650	−12	44	42	48
TOTAL	$1577	$3628	5%	43%	41%	43%

[a] For first half of fiscal year.

Paints and Coatings: The Global Challenge

Patricia L. Layman, C&EN London

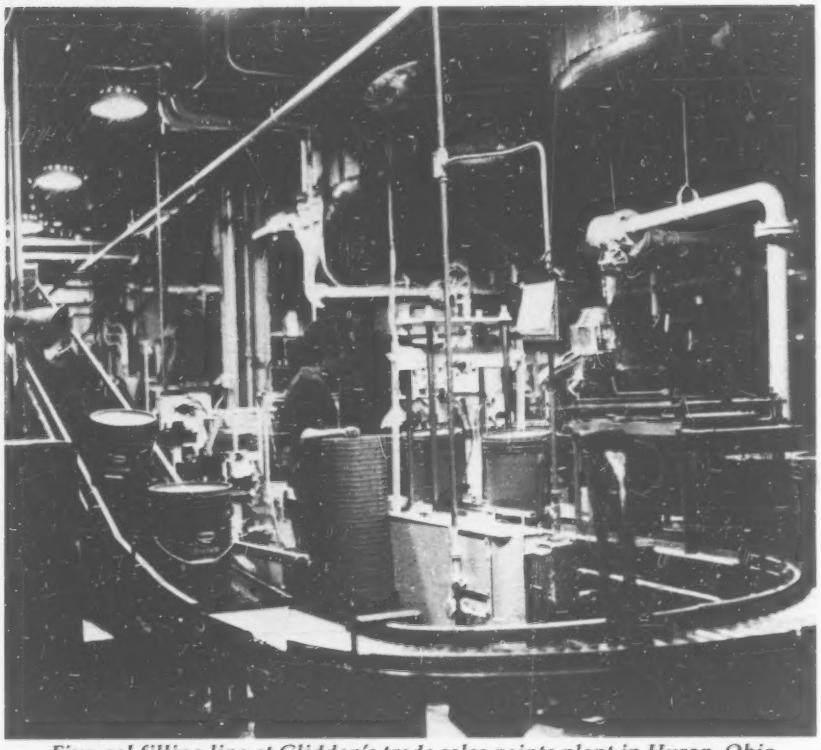
The woes facing the paint and coatings industry have been around for years: market maturity with slow growth; highly fragmented markets, served by thousands of competitors worldwide; shrinking end-use markets that further retard growth; shifting patterns of consumption from one set of historically comfortable geographic areas to other, developing areas.

What to do in such a situation? Turn to marketing, the gurus would advise. Fight for market share, to gain a point or two in the business, to help increase production, improve economies of scale, and boost profit margins. The easiest way to gain market share has always been to buy into the business, acquiring other suppliers (and, not necessarily coincidentally, reducing the competition).

Such acquisitions therefore have been a standard feature of the industry for years. In the U.S., for example, the number of coatings manufacturers has declined, primarily because of mergers or acquisitions, from 1500 in 1967 to just over 1000 today. In the U.K., as another example, there have been similar reductions: Where there were about 500 paint makers in the 1950s, there are now only about 250 to 300 producers.

For a long time, however, except for a few small and isolated incidents, such acquisitions were domestic. But in the past several years, there has been a decidedly international tinge to the buying binge. Some examples:

- Last month, BASF closed its purchase of Inmont, the Clifton, N.J.-based maker of printing inks and coatings, from United Technologies. BASF outbid Akzo, the Dutch chemicals giant, its major serious rival for the purchase.
- Akzo had wanted Inmont to add to its U.S. acquisitions last year of Wyandotte Paint Products, Sikkens, and Bostik's coatings operations.
- PPG Industries in 1984 bought the automotive paints unit of Lack-



Five-gal filling line at Glidden's trade sales paints plant in Huron, Ohio

werke Wülfing in West Germany, and consolidated its holding in Peintures Corona, probably the second-largest paint maker in France, going from 62% to full ownership.

• Imperial Chemical Industries last year bought Cie. des Vernis, the largest French paint maker. At the same time, BASF bought Valentine's U.K. operations.

• Tikkurila Väritehtaat, a subsidiary of the Finnish chemical company Kemira Oy., bought the London-based paint producer Donald Macpherson, the fourth-largest U.K. paint manufacturer.

• Wilhelm Becker, a Swedish company dominant in the Scandinavian market, and outbid for Macpherson by Tikkurila, promptly acquired 75% of Goodlass Wall, the U.K.'s sixth-largest paint maker, which also has capacity for making resins and powder coatings, and the British rights to the U.S.-owned Valspar label, in the trade and decorative paints market. It already had acquired Conway Coatings in Britain, Lackwerke Wülfing in West Germany, and Bichon in France.

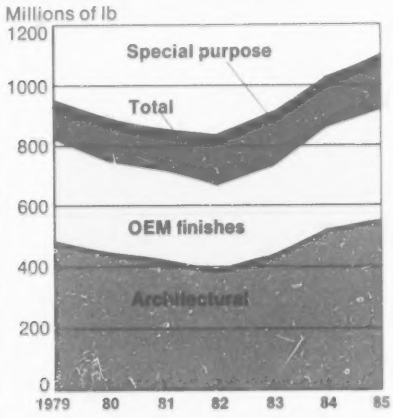
There were other mergers and acquisitions, too, of course, in strictly domestic markets. In fact, a quick survey of acquisitions in the U.S. alone points up that, between mid-1979 and mid-1983, there were roughly 50 to 55 acquisitions in the paint and coatings industry. From mid-1983 to mid-1985, however, there have been 73. Among the major ones were Clorox's acquisition of the Lucite name and manufacturing from Du Pont, to add to its own Olympic Stain division, in June 1983; last year's purchase by Valspar, of Minneapolis, of Mobil Chemical's U.S. and Canadian coatings operations; and last month's acquisition by RPM of Carboline, the industrial coatings unit of Sun Co., based in St. Louis.

The pattern of acquisitions has been changing somewhat, moreover, points out Stanley T. Pender, manager of business planning and marketing research at SCM's Glidden Coatings & Resins.

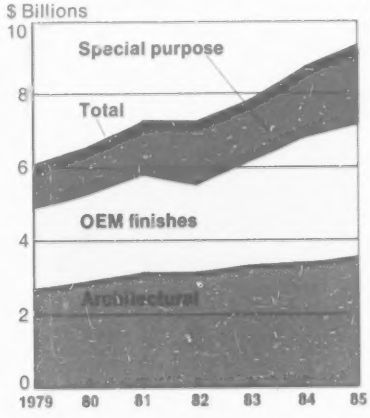
"Lately, the acquisitions have been divisions, or pieces of companies, as well as the small independents. Companies seem to be adjusting their technological strengths," selling off what doesn't fit their business portfolio strategy, and trying to build what will enhance it.

For example, Inmont recently sold its wood finishes business to Reliance Universal, a major in that field. Becker sold the automotive operations at its West German acquisition Wülfing to PPG, which is strong in that field. At about the same time, PPG also picked up the automotive coatings business of International Paint, leaving the British producer to concentrate on ma-

Architectural coatings have largest share of volume . . .

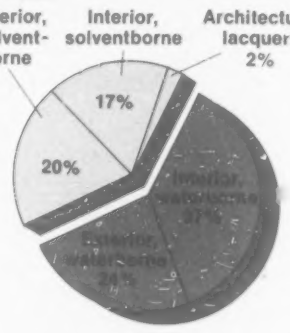


. . . but OEM finishes have taken the lead in value



Note: The three major types of paints and coatings, according to the Bureau of the Census, are defined as follows: **Architectural coatings**—includes stock type or shelf goods formulated for normal environmental conditions and general applications on new and existing residential, commercial, institutional, and industrial structures. **Product coatings for original equipment manufacturers (OEM)**—includes coatings specifically formulated for OEM to meet conditions of application and product requirements and applied to such product as part of the manufacturing process. **Special-purpose coatings**—includes coatings that also may be stock type or shelf goods but that differ from general architectural coatings in that they are formulated for special applications and/or special environmental conditions, such as exposure to extreme temperatures, chemicals, and fumes. **Sources:** Bureau of the Census, C&EN estimates

Waterborne formulations lead architectural coatings



1985 total market = 540 million lb

rine coatings, which it dominates worldwide, and other technologies in which it has strengths. ICI sold its business for heavy-duty paints for agricultural, construction, and earth-moving equipment to Donald Macpherson. Du Pont was divesting itself of decorative coatings when it sold Lucite to Clorox, to concentrate on its remaining, industrial- and automotive-oriented businesses. And Mobil and United Technologies now are essentially out of the paint business altogether.

"Companies are no longer being embarrassed about not being all things to all people," adds Pender. "We are all devoting ourselves to some technologies, and not to others.

Which technologies to devote a company's efforts to has, therefore, become a major point for contemplation in paint companies. The contemplation is also complicated by the fact that most of the business has become a global business. It is global because, in many areas, its customers are competing in global businesses.

"We have to react to the situation as it exists," says Malcolm G. Slaney, group vice president for PPG's coatings and resins division. "We are competing today on a world basis. But the paint industry is not the only one which is—all our customers are also competing on a global basis. Anytime somebody thinks we are competing in Pittsburgh, or in Pennsylvania, or even on the Eastern Seaboard, he's crazy."

Brian Letchford, executive director of ICI's paints division, Slough, U.K., would agree with that assessment, with a particularly British outlook. "ICI was archetypical of England and the British Empire," he points out. "Our 25 paint companies around the world would superimpose on an old map of the Empire and Commonwealth. We had incredibly extensive coverage. But about 10 years ago, we recognized that we had a relatively limited presence in Europe, and none in the U.S. or Japan. That concerned us, and we figured we would have to be worldwide."

The major reason paint and coatings companies figure they have to be worldwide marketers is because their markets—their customers —are going that way, too. Perhaps the best example is the automotive industry.

A study of the paint and coatings industry, published earlier this year by Commack, N.Y.-based consultants Business Trend Analysts, cites some of the problems facing the U.S. motor vehicle industry and their impact on the paint and coatings industry. "Squeezed [by] high interest rates, a rapid rise in foreign imports, and an extremely long and deep recession, domestic manufacturers saw production of trucks, buses, truck trailers, and automobiles drop sharply during the early 1980s. ... The market advances made by foreign competitors, principally Japanese manufacturers, are considered virtually irreversible." In fact, the report adds, foreign manufacturers will garner a larger share of the domestic auto market during coming years.

The BTA study addressed only the U.S. motor vehicle industry. But the same woes also have struck the European industry—imports are taking more and more of the business away from domestic producers.

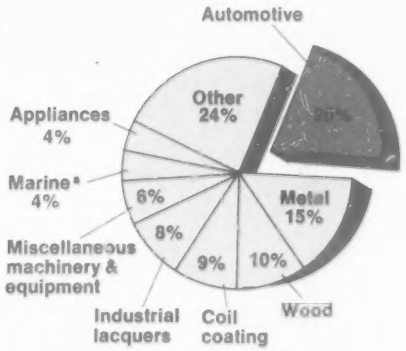
These problems affect the paint and coatings industry in two ways. First, quite simply, the fewer cars produced in the industry's country the fewer cars requiring coatings, and the market shrinks. Second, and

West Germany is largest paint producer outside U.S.

	1984 production (thousands of metric tons)	% change from 1983
West Germany	1321	1.0%
Japan[a]	1247	−0.1
France	809	−3.0
U.K.[b]	670	3.1
Italy	625	−0.8
Spain	278	−2.5
Netherlands	253	5.3
Sweden	189	−1.5
Denmark	133	7.6
Belgium	131	2.4
Austria	126	5.0
Portugal	92	0.7
Finland	82	4.1
Switzerland	82	3.8
Norway	75	1.8

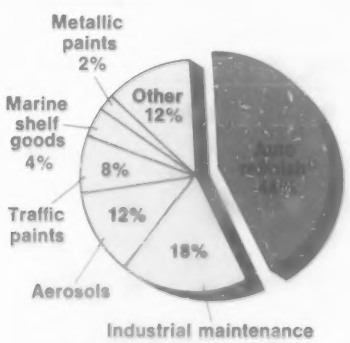
a Data for 1983; per cent change from 1982. b Production in millions of liters. Sources: European Federation of Paintmakers' Associations (CEPE), Rauch Associates, C&EN estimates

Automotive dominates a diverse OEM finishes market...



1985 total market = 385 million lb

...and special-purpose coatings, too



1985 total market = 165 million lb

a Excluding shelf goods. b Primers, undercoats, paints, and lacquers.
Sources: Business Trend Analysts, C&EN estimates

Allen (above left): appliance makers going global. Pender (above): pattern of acquisitions changing. Wagner: home-center sales very important

more of a challenge, production is moving away from areas the industry is used to dealing with. Hence, the industry is beginning to move into such areas as Taiwan, Singapore, Malaysia, and Egypt.

Sometimes the moves must be from scratch. State-owned auto production companies, for example, present coatings suppliers with a clean slate. Other times, it is longtime customers who are expanding production into new areas. For example, General Motors reportedly is negotiating with the Egyptian government to produce automobiles in that country, probably by consolidating and running the indigenous operations already there. If that indeed comes through, paint companies probably have legitimate reason to believe that GM will take along with it one of the paint companies it works with in the U.S.

There is no reason to think that the GM deal would be the last of its kind. Instead, the possibilities are most appealing for the industry. And it is that kind of optimism —looking at the end-use market as a growing global one, rather than a shrinking domestic one, that has paint and coatings companies working to build their market shares.

Autos are one such area; others include appliances and furniture manufacture and finishing, both of which are increasingly moving into nontraditional geographic areas. Appliance manufacturers are going international, points out Glidden's Alan W. Allen, vice president of industrial coatings, and "they seek world-class suppliers." So, too, do many of the furniture makers from the U.S. Southeast, for example, who now do significant amounts of manufacturing in the Far East, importing back into the U.S.

So, the trend is clear. "We may not have a world car yet," says PPG's Slaney, "but we're going to have a world paint" ready for when it comes along. Other major companies would agree, and are doing the same work to meet customer demands.

Large companies can afford the developmental and applications work, the toxicological testing, and the environmental/worker safety testing needed. Smaller companies, however, will not be able to support that kind of effort, to compete for the large end-use markets such as automotive or appliance coatings. "Nichers" will meet the demands in small, specialized areas that are too dinky for the majors to bother with. Assuming they can build a dominant share of that specialized market, they can do quite well, particularly without the overhead of a big paint company or corporate surroundings. European industry observers, for example, cite as an impressively successful nicher the West German coatings company Weilburger Lackfabrik, which has grown both internally and from acquisitions of other small companies 517% in nine years, to roughly $35 million per year.

Hans-Harald Grebe, owner and director of the firm, says, "Private ownership means we can spend two or three years [developing the market] without having to worry about profits and what the stock markets think of us. If you find the right niche, and attack it properly, you can then take that niche worldwide." And customer development, he adds, is built up directly at the executive level, with his personal commitment.

Whatever the size of the company, however, what is clear is that "what we can't have anymore is 10 different companies competing for a piece of the action in a given industry," says ICI's Letchford. "The British car industry, for example, used to be supplied by nine companies—[now] it is four or five. That's the way the world is going."

All that is establishing a handful of international supercompanies ready to operate in the paint and coatings industry worldwide. There is a great deal of disagreement as to the ranking. An informal poll of

Industrial coatings continue to be strong growth area for paint makers

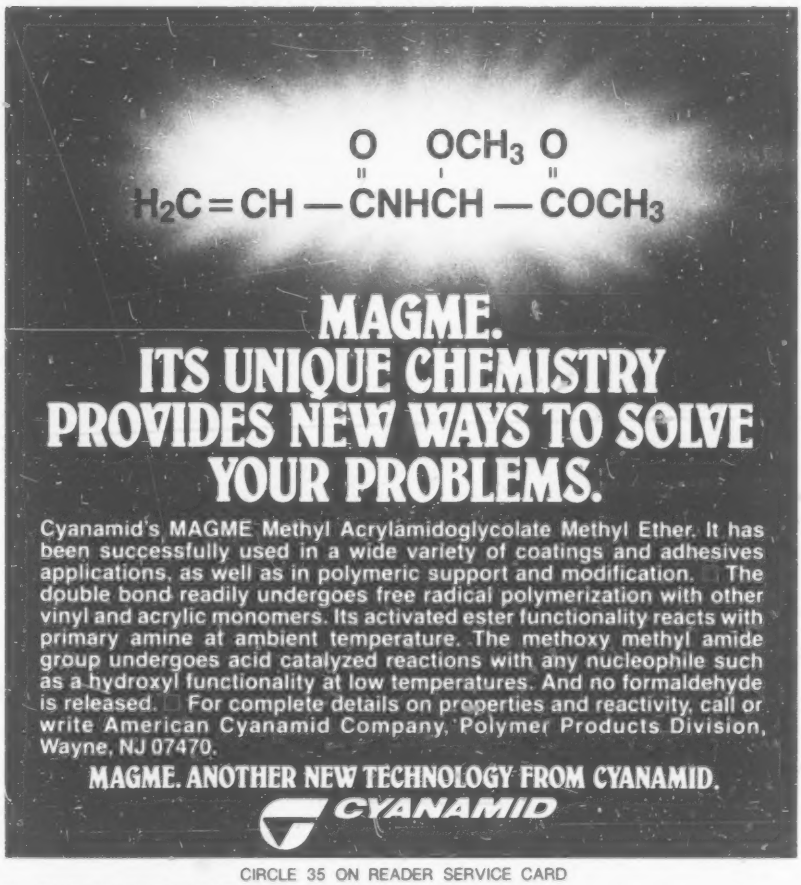
five executives and industry analysts for this report wound up with six different rankings. The same names, however, kept popping up; in alphabetical order, BASF/Inmont, Glidden, Hoechst, ICI, PPG, and Sherwin-Williams.

The specific rankings also depend upon what segment one is speaking of. For example, in the U.S. market, the sales of paints to the consumer, do-it-yourselfer, are dominated by Sherwin-Williams, which has elected to concentrate heavily on this segment and other architectural coatings; De Soto, which produces the paint marketed by Sears, as well as other products; and Glidden. Glidden is especially enthusiastic about selling via home-center stores, such as the Builders Square units owned by K-Mart, which Glidden supplies. According to Thomas F. Wagner, vice president for trade sales, "Surveys show that, of all the people who go into these home centers in any 12-month period, 55% will buy paint. This market has begun to become very important."

Slaney: competing on world basis

ICI dominates the trade-sales segment in the U.K., with probably more than 30% of the business. It has boosted this significantly over the past year and a half, since it introduced a solid emulsion formulation that looks vaguely like cheesecake but which spreads like a normal liquid paint. Two years earlier, ICI had demonstrated that innovation also can come in marketing, when it introduced a line of "natural white" formulations—whites with just a hint of color in them. The British market had long depended upon white paints; brilliant whites in 1983 accounted for some 60% of the total retail market. The whites-with-color now account for some 20% of the total retail paint market, much carved from the plain whites, but the rest taken from colors.

PPG has suffered a significant slide in market share in the U.S. retail segment. Partly, it is a matter of strategy. According to the 1984 annual report, PPG's strategy "is to provide one quality of product—PPG's best—for discerning do-it-yourselfers. Advancing PPG's strategy in 1984 was penetration of the home-center market, with several quality regional chains stocking Pittsburgh Paints products for their upscale customers." But it is also clear that the coatings division man-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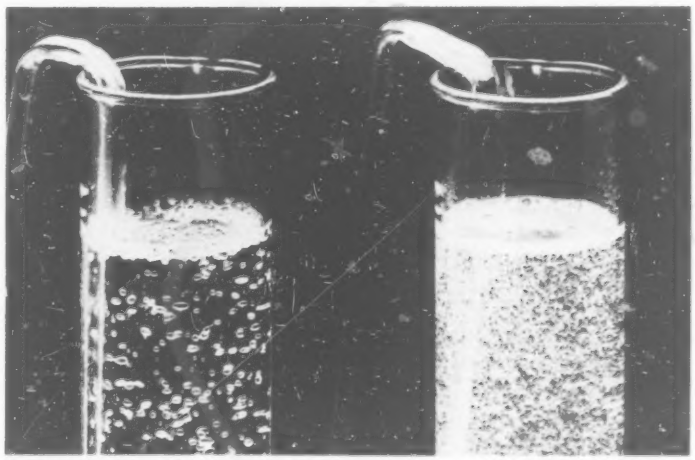
CIRCLE 35 ON READER SERVICE CARD

Beverage and food containers make wide use of waterborne coatings

agement is less than obsessed with consumer paint sales. When the subject came up, Slaney seemed somewhat surprised, discussed the topic briefly, and then returned with much more enthusiasm to the subject of industrial coatings.

Certainly, PPG plays a much more significant role in industrial coatings. Glidden is also a major in the field, as is Du Pont, Valspar/Mobil, and internationals including ICI, BASF, Hoechst, Akzo, and International Paint.



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Product Report

Within the industrial coating market, companies concentrate on their specialties. International Paint, for example, is by far the leading producer of marine coatings, supplying from its U.K. headquarters and various other plants around the world a market that has largely shifted to the Far East and the Middle East.

Glidden is probably the leader in powder coatings, having built on the technology it acquired years ago from Celanese. Its powder coatings business grew nearly 55% in volume from fiscal 1983 to 1984, and last June the company finished an expansion that will increase powder capacity 50% at its Charlotte, N.C., plant. By one estimate, consumption of powders last year was just over 50 million lb. One of the major applications is tops and lids of washing machines, replacing the traditional porcelain frit coatings; Glidden worked with Whirlpool Corp. to develop a satisfactory formulation.

This kind of cooperation between coatings makers and customers is becoming more and more the rule, not the exception. Customers want formulations to work on their products. For new technologies, coatings makers even will help train workers in application techniques.

With customers putting increasingly more pressure on paint and coatings suppliers to give consistent service worldwide, there is, unsurprisingly, a concomitant need for worldwide service from paint makers' raw material suppliers.

Raw materials are highly important to the paint and coatings industry. According to an analysis done by the Paintmakers Association of Great Britain, raw materials and containers account for 56% of the average paint manufacturing costs. The association points out that the proportions "can vary significantly indeed according to the type of product and market area." But the low end of the range is probably about 50%, and raw materials can easily run up to 65% of total paint manufacturing costs.

To some extent, paint and coatings producers help control raw material costs. As ICI's Letchford notes, "Most major paint companies produce their own resins," a major con-

ICI builds a market on "temporary"

It was a splashy press briefing that Imperial Chemical Industries' paints division held in London earlier this month, complete with a showpiece Aston Martin, the car of James Bond fantasies, worth a cool $75,000.

But it was also a serious message that ICI was presenting, in officially introducing Tempro, a family of temporary protective coatings it has been developing over the past four years. The Tempro systems are being touted as a major advance in the protection of special surfaces, such as the paintwork of new cars, untreated metals in temporary storage, plastics, and similar materials. They are also finding use as temporary coatings—as temporary highway marking paints, for example, and camouflage coatings.

The main-volume market for such coatings is the automotive industry, and ICI started its work with that industry about two years ago. "We developed the system alongside the car makers—it has to be compatible with their manufacturing systems," recalls one marketer at the company.

Tempro systems are aimed at the protective coatings already applied; for example, by car manufacturers that coat the cars to protect them against damage in transit between plant and dealer. The dealer then strips off the protective coating, preparing the automobile for purchase. Auto makers sometimes do this in the U.S., but in Europe, it is nearly always done.

Current coatings are wax based and must be stripped with solvents. That can pose environmental problems—how to dispose of the solvent strippers—and worker safety problems, given the flammable nature of the solvents used as strippers.

Those are major weaknesses ICI is hitting at with Tempro. Their coatings are water based, washed off with aqueous stripping compounds that can be flushed directly down the drain. ICI won't say all that much about the chemistry of the systems, but it does disclose that the Tempro coatings are based on a patented water-based acrylic copolymer system that forms a transparent film lasting up to a year; the removers are based on mild solutions of organic and inorganic alkaline compounds that can be used with hot or cold application methods, on any combination of surfaces. Each car uses about 1 L of Tempro.

Worker strips off Tempro in preparing car for purchase

So far, ICI can count as auto-making customers BL (formerly British Leyland) with its Mini, Metro, and Rover vehicles; Jaguar for all export models except to the U.S., and it is currently evaluating use for U.S.-bound models; and Aston Martin. According to the technical director of Aston Martin, who says he personally test-drives each car before it leaves the plant, the coating helps protect against stone damage. This "can be considerable at the 170 mph we test-drive them at," he points out.

And because European dealers are accustomed to protective coatings, ICI Americas' commercial development staff is promoting the system, under the tradename Belpro, to U.S. manufacturers who are exporting vehicles. (The Tempro name had already been registered in the U.S.)

ICI isn't looking just at the automotive area, however. Because the coating can be formulated to a matte, colored condition, it is also useful for paints of various types, needed for temporary applications. Some potential markets are rather larkish—marathon-running markings on roads, for example, or perhaps green stripes for St. Patrick's Day parades. Others are of military significance—providing changing camouflage coatings for tanks and other military vehicles in Scandinavia or Canada, perhaps—like so many mechanized ptarmigan or snowshoe hares.

Temporary coatings to highlight surface metal defects prior to finish-coating are a market the company is working to develop for automotive and other motor vehicle manufacturers and other industries using large pieces of sheet metal. The special version of Tempro is black-pigmented, to give high gloss and reflectivity to highlight minor surface faults. The coating can then be removed in the existing metal pretreatment cleaning stage already carried out prior to painting.

stituent of the formulations. PPG, for example, produces about 80% of its resins. Partly that is to ensure constant, controllable supply. But it is also a way for a paint company to keep proprietary technology—often the key to a formulation's success—proprietary. As PPG's Slaney puts it, "Our business is polymer R&D, and if you have people making the polymers for you, there go your secrets."

That leaves only some of the more commodity-type resins and the other major coatings constituents, such as solvents, and pigments, to buy. And buying has become an increasing challenge, as raw material prices have risen faster than the selling price of finished coatings and paints.

Data pulled together and estimates by Business Trend Analysts show that clearly. However, the

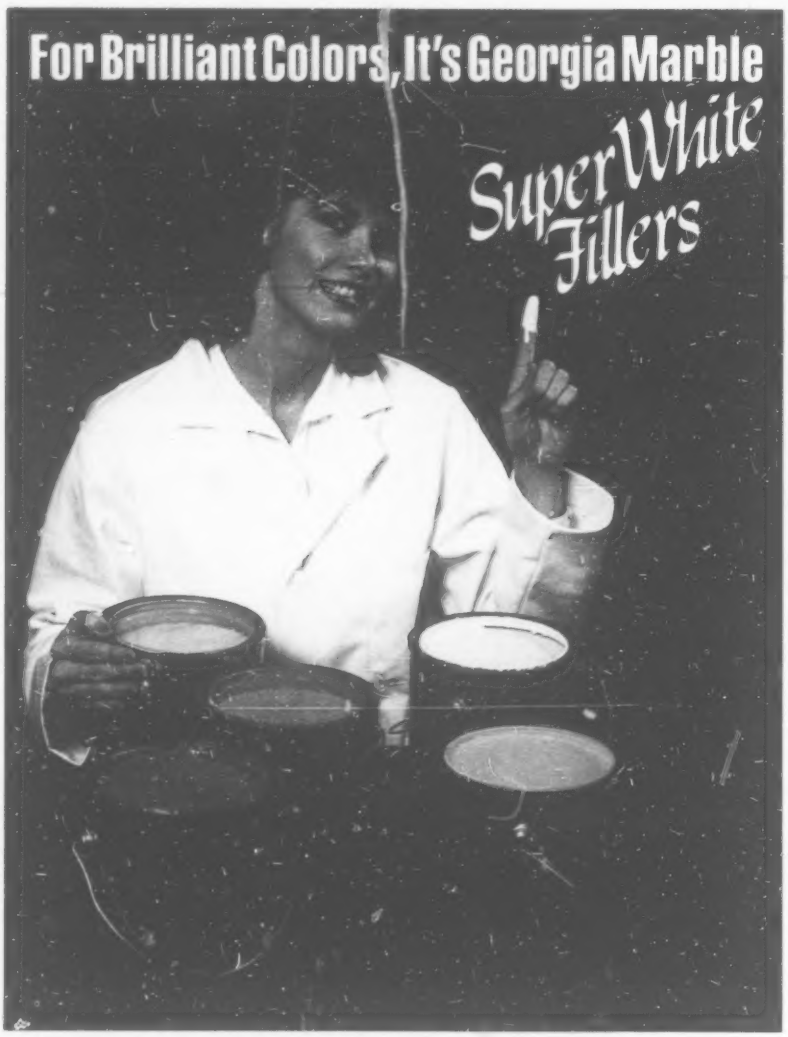
broader the base for a raw material supplier's selling, the better the possibility of helping control costs and subsequent price hikes passed on to the paint and coatings industry. BTA is somewhat encouraging about future price rises. "Although by 1984 prices of some materials, notably those of inorganic pigments, began to increase alarmingly," it notes, "the outlook remains fairly bright. Increasing downward pressure on crude oil prices should keep price increases of resins and solvents to modest levels for the next several years, while the depressed state of American agriculture portends continued weak prices for farm products such as vegetable oils."

The materials that paint makers buy have been selected for particular specifications for incorporating into particular formulations. As those formulations find their way around the world, then, the raw materials purchased around the world still must meet the same specifications. If the same company is supplying a product worldwide, the chances are that much better that the specifications will be the same—just right for the paint or coating formulation. Increasingly, the result is that paint makers are writing world contracts with suppliers.

Growing number of do-it-yourselfers has spurred trade paint sales

Executives at Exxon's Essochem Europe operations, for example, support that conclusion. "If we can guarantee the same solvents, for example, with the same specifications, it is an advantage to us," says one. The tie-ins are also attractive: "Our special link with PPG in the U.S. will help us as they expand in Europe," he points out.

"Smaller competitors I am sure are finding it more difficult to keep pace with the changes in the marketplace. Through the 1970s, there were national markets, with many different grades of products. There has been a change—fewer grades,



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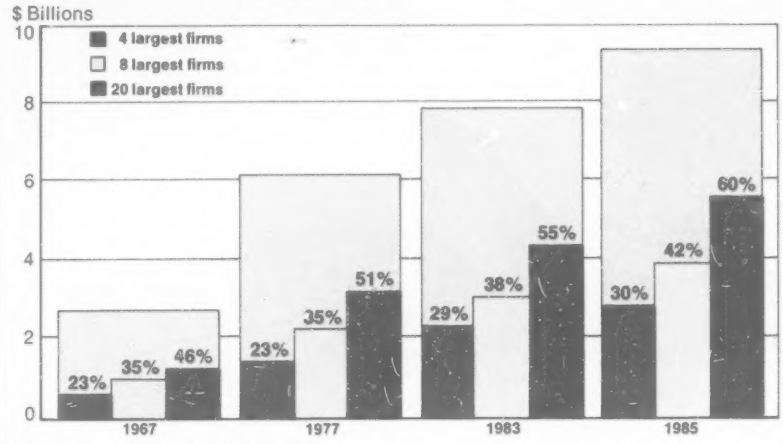
CIRCLE 60 ON READER SERVICE CARD

Largest U.S. paint companies are accounting for larger portion of industry shipments



Sources: Rauch Associates, C&EN estimates

more international. We are rationalizing production," adds the Essochem official, "to produce fewer grades with more consistent specifications and quality worldwide."

The specifications have to satisfy the paint maker and, of course, the end-use customer in the long run. Also, it will help as every firm in the chain becomes more adept at addressing international markets.

However, although going after international markets may be increasingly important to the paint and coatings industry, it is not everyone's cup of tea. There are different ways to accomplish the same results, some companies argue, and there are pitfalls for companies who aren't used to mixing national cultures, for example.

A case in point is Tikkurila, the Finnish paint maker that last year acquired Donald Macpherson in the U.K. Tikkurila is Finland's largest paint producer, with nearly half the domestic and with strong Scandinavian sales. Total sales were about $84 million in 1984. Macpherson was nearly twice that size—1984 sales of about $154 million. However, its profitability was low, less than 3% of sales in 1983 and 1984.

Tikkurila basically was buying distribution, in the U.K. and in the European Economic Community, especially important to it to help move out its universal tinting systems—colorant systems that can be used in a wide range of base formulations from nitrocellulose-based coatings to latex formulations—into trade and industrial coatings mar-

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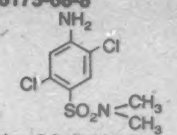
SANDOZ Organic Intermediates

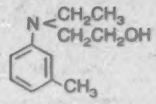
CAS 26175-68-8 ADCS



1-Amino-2,5-dichlorobenzene-4-sulphonic acid-dimethylamide, ground

MW269

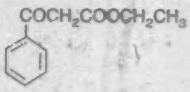
CAS 91-88-3 AOMT



N-Ethyl-N-oxy-ethyl-m toluidine

MW 179

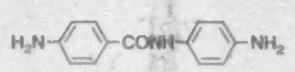
CAS 94-2-0 BEST



Ethyl benzoyl acetate

MW 192

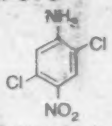
CAS 785-30-8 DABA



4,4'-Diaminobenzanilide

MW 227

CAS 6627-34-5 DCPNA



2,5-Dichloro-p-nitroaniline

MW 207

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CIRCLE 54 ON READER SERVICE CARD

kets, says Yrjö Sipilä, vice president of Tikkurila. "We couldn't grow much more in Finland," he says, "so we wanted to buy market share abroad, to broaden out."

The acquisition, however, has turned out more troublesome than anticipated. Pentti Sipilä, managing director of Tikkurila, has moved to London to devote himself to reshaping Macpherson, an indication that things haven't been so smooth as expected. And, in turn, many of the British employees have felt that the new management has not handled things well.

"The company was badly managed," concedes one former executive with Macpherson. "But that is not to say that all the management there was bad—and yet, that is what they seem to think. They have not handled their people well, and they are now losing many of them, whom they need. They don't yet have the international people-managing skills."

Glidden elected to go into the international business in another way, bypassing that problem, in Europe. The company had long been active in Latin America, first in Central America and later in both Colombia and Brazil. It is now one of the major paint producers in Brazil, which is saying more than most North Americans probably believe. Brazil is one of the top eight paint-producing nations in the world, according to the recently issued report on the U.S. paint industry by Rauch Associates, of Bridgewater, N.J.

In Europe, however, after three acquisitions in the early 1960s that turned out less than wildly happy, Glidden sold the three off and decided instead to concentrate on licensing. "We recognized that we had strong basic scientific knowledge of polymer chemistry," says G. Keith Brewin, vice president of international operations for Glidden division of SCM, "and we decided on the licensing approach to technology. Our management at the time decided the returns on their time were not sufficient to keep companies there."

In a few cases, the licensing has led to ownership—a minority ownership in New Zealand, for example—but basically, the company

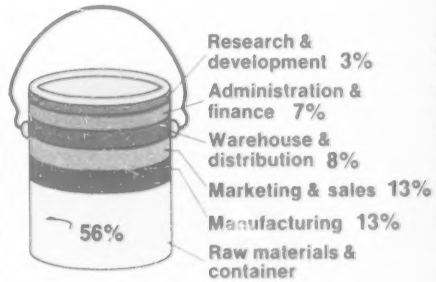
Brewin: chose licensing approach

concentrates on working with other technologically sophisticated paint makers as license partners. This is becoming increasingly difficult, acknowledges Brewin. Companies are becoming bigger, and medium-sized ones can't afford enough supporting R&D, nor do they have the scale to compete on price.

"This reduces the chances of an American company going in and working with a small company," he adds. "They have to be big enough to utilize your technology—if they aren't big enough, why work with them?"

Notwithstanding that, however, Brewin is convinced that the licensing strategy is sound. It has been refined over the past few years, he

Raw materials costs dominate typical can of paint



Source: Paintmakers Association of Great Britain

The giant oyster stirs a giant controversy

The giant, or Pacific, oyster *Crassostrea gigas*, is far from a humble creature. At its maximum size, 25 cm, it is larger than a standard dinner plate. It has, however, humbly found itself at the heart of an Anglo-Franco controversy over yacht-bottom antifoulant coatings that eventually may run through the industry worldwide.

Specifically, the controversy involves antifoulant coatings based on tributyl-tin biocides. Organotins are the latest in a series of biocides used in antifoulants, which go back thousands of years. The Phoenicians, for example, used copper on the hulls of their ships, more than 3000 years ago. Archimedes recommended a covering of lead sheathing, the Tudor Henrys ruling England opted for a layer of animal hair, covered with pitch. In this century, mercurial and arsenic compounds were the biocides of choice, as boosters to enhance the activity of copper, until they were forced out because of environmental concerns. They were replaced by the organotins, heralded as more efficacious and less toxic.

The key to these has been biocidal activity against seaweed and barnacles—"grass" and "animals," to the paint industry. This debris, settling onto the hull of a ship, can increase fuel bills significantly by hindering the passage of the ship through water.

For the past decade and a half, organotins have seemed the answer. They are less toxic to other living organisms, the argument goes, than mercury and arsenic, and more effective than copper. However, according to French researchers, organotins also have the unpleasant habit of hindering the growth of Pacific oysters. And that, to the French, is a serious matter.

France is by far the largest producer of oysters in Europe, and Pacific oysters have become increasingly important as a crop since they were introduced from their homebeds in the Orient. They have been supplanting one of the mainstays of the French industry, the Portuguese oyster, and, indeed, are now called by the same name, huitres creuses. When it was first suggested, then, that organotins from the antifoulant coatings had been leaching out, spoiling the oyster waters and causing gross deformation of the oyster shells, the French took the suggestion very seriously.

The controversy arises primarily because environmental regulators and marketers in other countries do not agree—at least, completely—with the French theory. The English company International Paint, probably the largest marine-coatings maker in the world, says that when the theory was announced, in 1981, the French authorities had no measurements of tributyl tin either in water or in oyster flesh. There was no evidence it was present in the environment, says the company. On the other hand, according to William Waldegrave, undersecretary of state for the U.K. Department of the Environment, "tributyl tin was detectable in both water and oyster tissues at all sites where the Pacific oysters had consistently failed to grow well in [the Ministry of Agriculture, Fisheries & Food] trials."

The question has gone to the European Commission, which has begun to study the problem. Given the glacial speed with which EEC usually acts, however, the authorities in France and Britain have each acted, but in different ways.

Final draft regulations have not yet been issued by the British government, but it is likely that the regulations will limit the retail sales of certain organotin antifoulants, drawing distinctions between the two types now being made. The earlier developed coatings are simple mixtures of coating and tributyl tin, stirred in, in effect. In the newer products, the tin is bound into the copolymer resin making up the coating. International Paint officials expect the weight of metallic tin in the dry copolymer film to be limited to 7.5%, and the weight of metallic tin in the dried film of the older-type coatings to be limited to 2.5%—a weight low enough to ban such coatings effectively. And the limits will be only for pleasure craft, boats less than 12 meters in overall length; commercial vessels will not be affected at all.

In France, although it is still legal to make organotin antifoulants and to sell them, it is illegal to use them, except on exempted vessels—boats made out of aluminum alloy and all vessels more than 25 meters in length. However, International Paint, which says it is the brand leader in France, still sells organotin paints there—"far more than the amount needed for exempted vessels," says one marketer. "It looks as though people are ignoring the law."

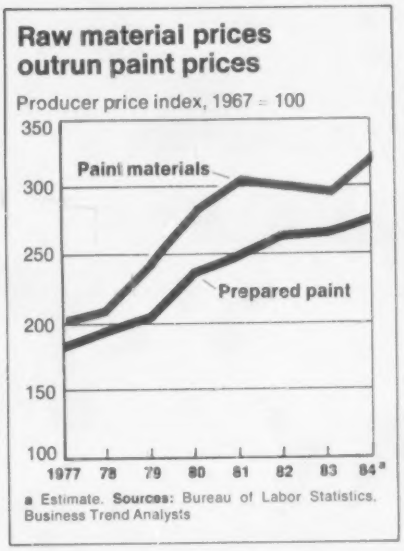
More worrisome, paint researchers feel, is the tendency of people to experiment with biocides that are relatively untested. Copper, on its own, is not very effective; hence the tendency to boost its performance with mercury or arsenic compounds. At least one source says that mercurials have appeared again in some French antifoulant formulations.

Meanwhile, in the U.S., environmentalists have begun following the controversy. Coatings marketers have been heartened by an environmental assessment done by the Navy, to the effect that there is no significant impact on the environment from the Naval surface fleet using organotin antifoulants. It is a continuing program of investigation, however, and will be reviewed in another two years. The assessment said, however, that there is a great deal regarding the antifoulants that is unknown, so that more research and tests are needed.

says, as licensees select more. "They don't want everything, but are more selective, choosing the technology that will give them a time lead." The company is also starting to see exchanging of technological skills in another way, he believes: "Companies are saying, 'Maybe we won't do the R&D, we'll let Glidden do it, and get the second generation.' There is some cross-fertilization—we're good at this, you're good at that, so let's work in a cooperative venture." That is difficult if both companies are competing in the same marketplace. So, according to Brewin, "Glidden is in an ideal position—our hands are not tied. We have the licensees but not the investments."

Both ICI and PPG, however, have opted for direct investment.

ICI has long operated internationally, as it followed the Empire



and stayed with the Commonwealth. It is now working to fill in the gaps. The acquisition of Valentine in France was a buying of both market share and an outlet for new technology, according to Letchford. "We already had a small company in France which was fairly strong in can coatings, industrial coatings, and powders. But this was not the mainstream position we wanted to be in. There was Valentine, especially strong in decorative paints and refinishing, and there was Valentine available. It made sense in terms of broad strategic development."

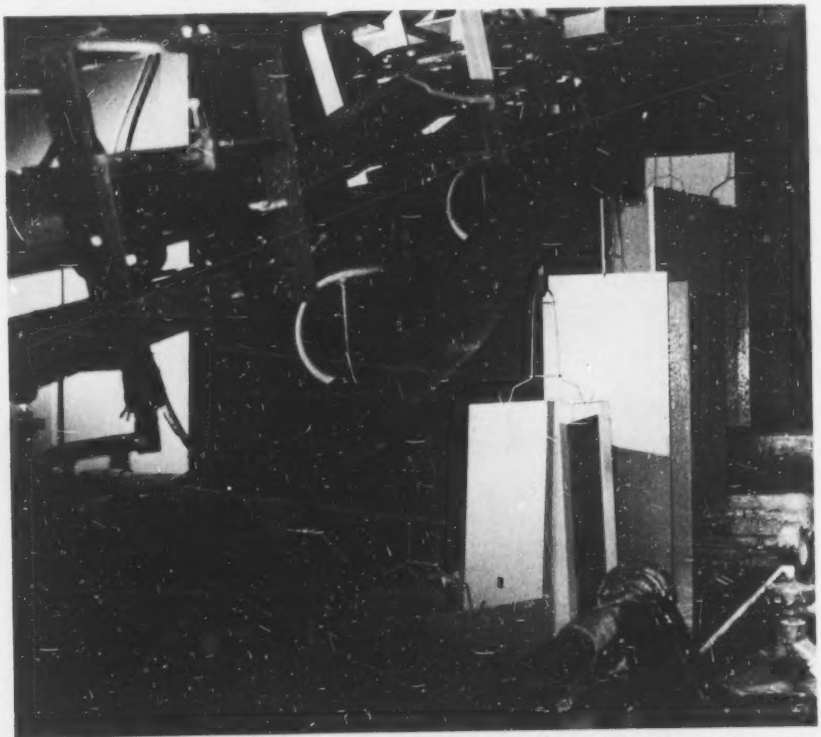
That was particularly so because both ICI and Valentine are so strong in the decorative side of the business, selling architectural coatings. These are still basically national or regional markets, most industry observers believe. As Letchford puts it, "I would be surprised to find a continental European decorative paint. We would find it difficult to package our Dulux, for example, and send it to France." However, the new market area expands the potential for new technology: "We developed the solid emulsion technology in the U.K., and sold it here. But we are also selling it now in France and West Germany—you can take knowledge across borders."

A strategy for global development also has shaped PPG's increasingly aggressive international push. The company had had tentative international operations—in Toronto—since after World War II, then built a plant in Mexico City. About 18 years ago, the company went to Europe, buying a small company in France, and then an interest in an Italian paint manufacturer.

Electrodeposition bath at auto plant uses PPG Industries cationic coating

But all that time, says Slaney, "we didn't take advantage of having a large paint company. We had a series of small paint companies. We had no special strengths, just the presence. We couldn't say to Ford in Dearborn, 'Look, give us the specs, and we can supply it around the world.'" A growing awareness, however, that ultimately a company would have to be able to say just that, led the company to its determination to move into global markets.

As ICI's Letchford contends, it is important for all paint companies to sit back and look carefully at what their strengths are, to recognize that one company can't do everything, whether geographically or in product lines, and begin to specialize in areas where their expertise is strongest. Also, as Jeffrey R. Back, senior consultant with C. H. Kline & Co., of Fairfield, N.J., argues, coatings suppliers may sell into 30 markets but there will be only three top suppliers and a host of me-too producers. If all these come to pass, then surely the day is coming when there will be a world-class paint company. There are world-class symphony orchestras, world-class marathon runners, world-class skiers. Why not a world-class paint company? □



Water cooler shells emerge from electrodeposition tank at Ebco Manufacturing